



Case report

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AN UNUSUAL PRESENTATION OF A CHRONIC SUBDURAL HEMATOMA IN A PATIENT WITH AN ARACHNOID CYST

SUMMARY

A 46 y/o male patient with a chronic subdural hematoma (CSDH), developing long after a head trauma and an ipsilateral arachnoid cyst (AC), was operated and during the removal of the CSDH a 1x1cm extracerebral tumor was noticed. The pathologist identified the tumor as a meningioma. A Gradient ECHO MRI sequence raised some suspicions about the finding, and a specimen review reported a fibrous organized CSDH. This paper points to the role of MRI in the diagnosing such intracranial processes.

Key words: chronic subdural hematoma, meningioma, Gradient ECHO MRI, head trauma

INTRODUCTION

The etiology of chronic subdural hematoma (CSDH) can be traumatic or spontaneous. CSDHs are most often associated with a previous head trauma, i.e. in over than 50% of the cases (1). In the event of a traumatic etiology, CSDHs probably begin as acute subdural hematomas; an important role in their pathogenesis is played by the tearing of the superficial and bridging veins during a rapid brain deceleration in head injuries. The risk factors for CSDH include brain atrophy, chronic alcoholism, epilepsy, coagulopathy, anticoagulant therapy, cardiovascular diseases, thrombocytopenia, diabetes (2, 3) intracranial meningioma and arachnoid cysts (AC) (4.6% (4)). These risk factors play role in both traumatic and spontaneous CSDHs. The incidence of CSDHs is 1-5.3 per 100.000 people per annum (3).

AC is not a rare congenital anomaly of the CNS which is discovered in 1 per 200 autopsies (1). Most ACs which become symptomatic usually become so in the early childhood. The most frequent location of the AC is the middle cranial fossa (49%).

ACs are classified by CT in the following manner: Type 1-small biconvex, located near the top of the temporal lobe without the mass effect; Type 2-located in the proximal and intermedial segments of the Sylvian fissure, completely opening the insula; Type 3-involves the entire Sylvian fissure, causing a significant midline shift and impressing into the bony structures (5).

CASE REPORT

Our patient was a 46 y/o male who was involved in a motor vehicle accident (MVA) and sustained blunt head injuries with a brief loss of consciousness. He was transported to the medical centre where a head X-ray was performed. The X-ray showed no signs of skull trauma, so the patient was released the next day. One month after the initial hospitalization, the patient returned to the hospital complaining of headaches. A head CT scan (*Figure 1*) showed no signs of trauma; only Type 1 AC on the right side of the middle cranial fossa (MCF) was noted.

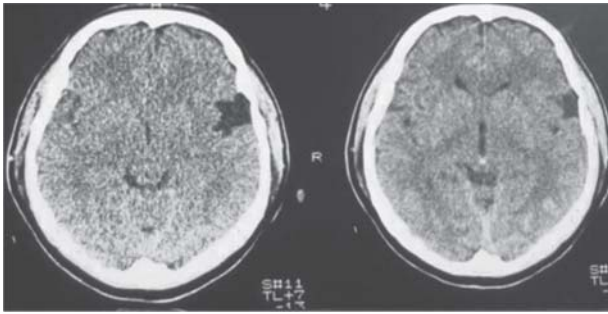


Figure 1. Brain CT scan one month after the head injury: Type 1 AC present on the right side of the MCF, no evidence of trauma or intracranial hemorrhage identified.

The patient had no symptoms associated with the cyst prior to the accident. Four months after the injury, the patient started experiencing persistent headaches and left side weakness. A brain MRI (Figure 2) was performed and showed a massive CSDH on the previously injured side and ipsilateral to the AC which did not show any signs of intracystic hemorrhage.

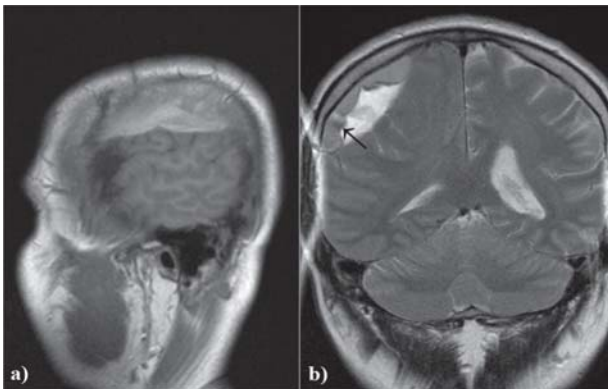


Figure 2. a) The most lateral sagittal view of the T1-weighted MRI shows the proximity of the frontobasal parts of the CSDH and the arachnoid cyst; b) T2-weighted MRI coronal view- the arrow points to a small heterointense zone inside the heterointense zones representing the CSDH.

We performed a simple trepanation at the parietal eminence. The dura having being exposed was opened with a cruciform incision, but before the hematoma evacuation could commence a small firm extracerebral mass attached to the inner side of the dura under the parietal wall of the CSDH's capsule was noticed. The tumor, barely the size of a chestnut, was extracted together with its dural attachment and then sent to the pathologist. Intraoperatively, the tumor appeared as a mildly vascular meningioma. Upon completion of the surgery we evaluated the MRI scans, and in one of the coronal views found a heterointense circular zone inside the hematoma (Figure 2b).

The heterointense zone was the same size and location as the tumor removed. The initial pathologic report identified the mass as a fibrous meningioma. Another review of the MRI raised some suspicions about the pathology report, so a Gradient ECHO MRI sequence (t2fl2d_TRA.hemo sequence on a Siemens Magnetom Avanto 1.5T) was performed and the findings suggested an organized hematoma and not a meningioma (Figure 3).

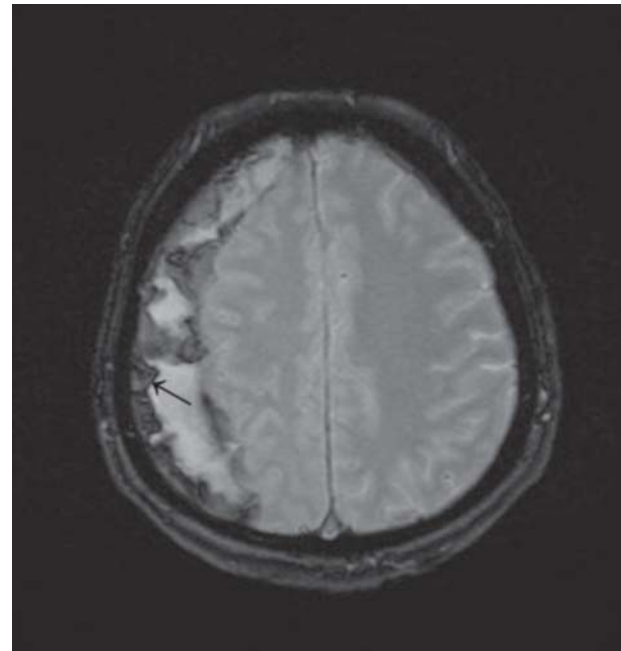


Figure 3. Gradient ECHO MRI shows mixed signal of chronic blood products in suspected area. (arrow)

The pathology specimens were sent for revision and the new report confirmed that it was a fibrous organized chronic hematoma (Figure 4).

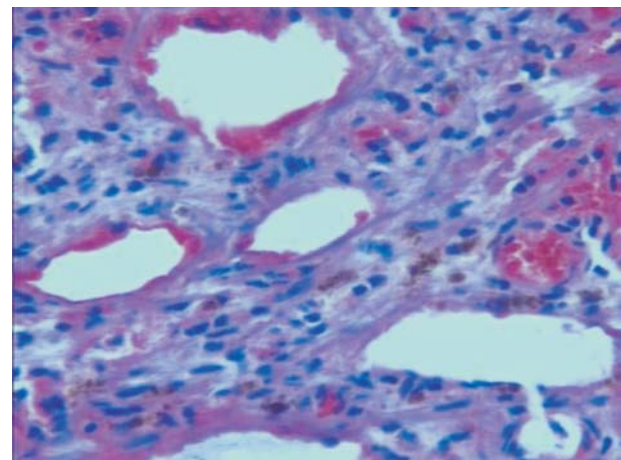


Figure 4. Fibrously organized CSDH HE x200- Fibroblasts, collagen fibers and newly formed blood vessels

DISCUSSION

The subdural hematoma capsule forms around day 4 (6) and the CSDH is completely formed after the third week, which was not the case here. The CT scan performed 1 month after the MVA did not show the CSDH. The development of the outer layer proceeds at a relatively predictable rate, thus being useful for dating the hematoma.

The AC, present in this patient, is of typical localization (MCF) to be associated with the CSDH (4, 7), so we believe that in this particular case the head trauma was only the initiator of certain changes within the AC walls (4), which subsequently led to the hemorrhage. Our claims can be substantiated by a study (7) that enrolled 12 patients, each with a CSDH and an AC, which concluded that even a small AC can be a risk factor for CSDH after a mild head trauma. A study by Wester (4) found that 7 out of 11 patients, with an AC and a CSDH, had previous history of head trauma. In some patients, the head trauma was several months apart from the formation of the CSDH.

Patients with AC, especially if present in the MCF, carry a lifetime risk of chronic intracystic or subdural hemorrhage (4). Some authors (8) point out the objective possibility of overlooking subacute and

early CSDH in a CT scan and suggest the use of early head MRI in the patients with an AC.

Our fibrous organized chronic hematoma had pseudoinsertion to the dura and macroscopically resembled a meningioma as most meningiomas are rubbery or firm, well-demarcated, rounded masses. (9). Fibrous meningiomas are characterized by parallel fascicles of fibroblasts in a matrix rich in collagen and reticulin similar to the fibrous organized CSDH.

Gradient Echo MRI sequence differentiates between tumors and CSDH by detecting chronic decaying products of blood.

The AC will be managed in the next phase of this patient's treatment, following a post-operative CT scan.

CONCLUSION

Chronic subdural hematoma emergence, more than three months after a mild head trauma, and in the presence of an ipsilaterally located arachnoid cyst does not occur only due to the head trauma but also due to the aforementioned predisposing factors. A head MRI can be a very valuable tool for indicating the revision of the pathologist's findings.

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NEOBIČAN PRIKAZ SLUČAJA HRONIČNOG SUBDURALNOG HEMATOMA KOD BOLESNIKA SA ARAHNOIDNOM CISTOM

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SAŽETAK

Prikazan je slučaj muškarca starog 46 godina sa hroničnim subduralnim hematomom (HSH) koji se razvio dosta vremena nakon povrede glave i ipsilateralnom arahnoidnom cistom, gde je u toku operacije odstranjivanja HSH pronađen i ekstracerebralni tumor veličine 1X1cm. Patohistološki (PH) je tumor identifikovan kao meningeom. Gradient ECHO MRI sekvenca je pokazala sumnju u PH nalaz i zatražena je revizija koja je pokazala da je uzorak u stvari bio fibrozni organizovan HSH. Ovaj rad ukazuje na ulogu magnetne rezonance u dijagnozi ovih intrakranijalnih procesa.

Ključne reči: hronični subduralni hematom, meningeoma, Gradient ECHO MRI, povreda glave